SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

PRELIMINARY DRAFT
RULE 2202 - ON-ROAD MOTOR VEHICLE MITIGATION OPTIONS

IMPLEMENTATION GUIDELINES

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I. BACKGROUND

A. Summary

Rule 2202 has been designed to reduce emissions from mobile sources. The Rule provides employers with a menu of options that they can choose from to implement and meet the emission reduction target (ERT) for their worksite.

The purpose of this document is to provide guidelines for compliance with the provisions of Rule 2202. The various emissions reduction strategies and trip reduction strategies currently contained in the Rule that employers can implement and receive credit towards their ERTs are listed in the Table below.

Emission Reduction Strategies	Trip Reduction Strategies
• ~~Old Vehicle Scrapping (Rule 1610)~~	• Peak Commute Trip Reductions
• Clean On-Road ~~Vehicles (Rule 1612)~~ Mobile Sources (Regulation XVI)	• Other Work-Related Trip Reductions
• Clean Off-Road Mobile ~~Equipment~~ Sources (Regulation XVI)	• Vehicle Miles Traveled (VMT) Programs
• Other Mobile Source Offset Programs ~~(Programs Regulation XVI)~~	• Off-Peak Commute Trip Reductions
• Air Quality Investment Program	
• Short Term Emission Reduction Credits From Stationary Sources (Regulation XIII)	
• Area Source Credits (Regulation XXV)	

Table I-1: Emission Reduction Options.

As an alternative to meeting the ERT at their worksite the Rule allows the employers optional implementation of an Employee Commute Reduction Program (ECRP). Implementation details of this strictly optional program are included in the ECRP Guidelines. The Implementation Guidelines outlines the framework, calculation methodology, and criteria used in determining emission reductions credits and vehicle trip emission credits (VTECs) that can be applied towards meeting emission reduction targets (ERT).

B. Emission Reduction Target (ERT)

Employers subject to Rule 2202 are required to implement an emission reduction program and meet an annual ERT for Volatile Organic Compounds (VOC), Oxides of Nitrogen (NOx) and Carbon Monoxide (CO). Figure I-1 outlines the equation used to determine the ERT for each pollutant. A complete discussion on emissions reduction is contained in ~~Appendix A~~ Chapter V.

$$\left[\begin{array}{c}\text{Emission}\\ \text{Reduction Target}\\ \text{(lbs/year)}\end{array}\right] = \left[\text{Employees} \times \begin{array}{c}\text{Employee Emission}\\ \text{Reduction Factor}\end{array}\right] - [\text{VTEC}]$$

Figure I-1. Emissions Reduction Target Determination.

~~For further explanation of the above formula refer to Appendix A.~~

C. Pollutants Considered

Vehicle trips are responsible for the emissions of VOC, NOx, and CO. Most trip reduction programs reduce emissions by similar relative amounts. Emission reduction strategies, however, aimed primarily at reducing emissions rather than trips, may reduce emissions by different relative amounts. Rule 2202 is designed to reduce emissions of VOC, NOx, and CO, by an equal or greater amount to that achievable through trip reduction. Rule 2202 allows employers to select and implement a combination of emission reduction strategies and meet the site-specific ERTs for VOC, NOx, and CO.

II. EMISSION REDUCTION STRATEGIES

The emission reduction strategies considered in this document may include, old-vehicle scrapping, clean on-road vehicles, clean off-road vehicles, other mobile source offset programs under Regulation XVI, STERC from stationary sources, area source credits, and air quality investment. In addition, companies can meet the emission reduction requirements, in whole or in part, by obtaining sufficient VTECs.

Rule 2202 offers employers the opportunity to obtain VTECs from the implementation of optional trip reduction strategies. These VTECs, obtained through peak-commute trip reductions, other work-related trip reduction, or vehicle miles traveled (VMT) offsets, can be applied towards meeting an employer's ERT. Credit for any program must go beyond the requirements of existing state and federal programs to avoid "double counting" the emission reductions. All emission credits are valid according to the conditions, guidelines, or regulations under which they were generated.

A. Mobile Source Emission Reduction Programs

Any person may elect to use mobile source emission reduction credits (MSERC) generated in accordance with the provisions of Regulation XVI - Mobile Source Offset Programs. Regulation XVI sets forth the requirements that are based on voluntary programs that achieve emission reductions beyond those required by local, state and federal regulations or programs. ~~Employers~~ Any person may generate MSERCs through the voluntary implementation of any Regulation XVI program and apply them toward meeting the ERT for their site or trade and/or sell them to ~~other employers~~ any person. Alternatively, employers that have a shortfall in meeting their ERTs can purchase surplus MSERCs from other employers or a credit vendor.

~~Rule 2202 offers employers the opportunity to obtain VTECs from the implementation of optional trip reduction strategies. These VTECs, obtained through peak-commute trip reductions, other work-related trip reduction, VMT offsets or employee commute reduction programs, can be applied towards meeting an employer's ERT. Credit for any program must go beyond the requirements of existing state and federal programs to avoid "double counting" the emission reductions.~~

B. STERC From Stationary Sources

Any person may elect to use STERC generated by stationary sources after January 1, 1996, in accordance with the provisions of Regulation XIII - New Source Review. Regulation XIII sets forth the requirements that proposed new or

modified stationary sources must meet before construction can take place. These requirements are in addition to those specified by other rules and include use of Best Available Control Technology (BACT), and use of ERC to offset any emission increases. Employers may reduce emissions through the installation of air pollution control technologies, process modifications, or equipment shutdowns and generate ERCs and convert them to STERCs to be ~~and~~ apply~~y~~ied ~~them~~ towards meeting the ERT for their site or trade them to other employers or stationary sources.

C. Regulation XXV - Intercredit Trading

Regulation XXV - Intercredit Trading provides an opportunity for employers to generate or obtain emission reductions from alternative sources and apply them towards meeting the ERT for their site or trade them to other employers or stationary sources. Emission credits generated pursuant to Regulation XXV and used in Rule 2202 are subject to the same limitations as set forth in that regulation.

Included in the Intercredit Trading Program are an air quality investment program and area source credits. Area source credit generation is a voluntary program and provides a mechanism to convert emission reductions from non-permitted stationary sources into tangible emission credits. Area sources included a wide variety of sources, such as small combustion equipment including engines, heaters, and boilers. Rule 2501 - Air Quality Investment Program is a voluntary emission reduction compliance option, in which moneys are paid by a Clean Air Investor to the SCAQMD for use to fund stationary and mobile source emission reduction strategies that will achieve emission reductions that are equivalent to or greater than those required under the specific Regulation IV, XI or Rule 2202 provision(s) applicable to the Investor's operations.

D. Other Emission Reduction Strategies

Any person may submit a written proposal to generate emission reductions and apply them toward meeting the ERT for a worksite or trade and/or sell them to any person provided that the written proposal demonstrates to the Executive Officer that it will achieve real, quantifiable, enforceable, and surplus emission reductions for a discrete period of time. The Executive Officer shall approve alternative emission reduction strategies that are consistent with SCAQMD regulations, approved methodologies, Governing Board policies and guidelines, and the guidelines and methodologies established by the California Air Resource Board and the Environmental Protection Agency.

Written proposals must be submitted at least 30 days prior to implementing the alternative emission strategy and are subject to Rule 306 - Plan Fees. Submitted proposals shall, at a minimum, include the following:

1. Project description;
2. Proposer's name and address;
3. Owner and/or operator of the equipment name and address;
4. Equipment description;
5. Description and location of operations;
6. Project life;
7. Hours of operation;
8. Estimated emission reductions;
9. Emission reduction calculations, description of methodology used and references; and,
10. Recordkeeping methods, including tracking of emission reductions claimed.

Emission reductions claimed shall be submitted on a regular basis after operations have taken place and placed in the Rule 2202 emission bank pursuant to Executive Officer approval.

~~C.~~E. Air Quality Investment Program (AQIP)

The concept of an AQIP is based on relative cost-effectiveness. Employers may participate in the AQIP by submitting an air quality investment, to be placed in a restricted fund as set forth in Rule 311 - Air Quality Investment Program Fees.

The SCAQMD Executive Officer will recommend to the SCAQMD Governing Board, for approval, on a quarterly basis, the release of monies from the restricted fund for emissions reductions programs that achieve emission reductions equivalent to the level of employers' participation.

Proposals for using monies from the restricted fund will be accepted by the SCAQMD Executive Officer on an ongoing basis. The SCAQMD Executive Officer will determine the amount of ~~mobile source~~ emission reductions required to demonstrate equivalent emissions reductions and the amount that will be achieved by the proposal. The Executive Officer will then recommend ~~the most cost-effective~~ proposals that achieve equivalent mobile source emissions reductions. The Execution Officer may use inter-pollutant crediting to achieve emissions equivalent to the level of employers' participation. In addition, the Executive Officer will recommend that the allocation of funding for proposals that reduce equivalent emissions within each county be proportional to the contribution level of employers within each county to the greatest extent feasible. On a quarterly basis, the Executive Officer will provide to the SCAQMD

Governing Board a status report on program effectiveness and the balance of monies in the fund.

~~1.~~F. Emission Reductions~~ Requirements~~

Any proposed ~~program seeking AQIP funding~~ emission reduction strategy should contain an emissions or trip quantification methodology which follows the general format outlined in ~~Appendix A~~ Chapter V. Any proposed program may be submitted in combination with other programs, including, but not limited to, old vehicle scrapping or work-related trip reduction programs. SCAQMD will evaluate programs to assure that they produce emissions or trip reductions that are real, surplus, quantifiable, and enforceable.

~~a)~~1. Real Reductions

"Real" reductions are those that result in actual emission reductions and do not occur as a result of accounting practices, or "paper reductions." The key test in determining whether a strategy will result in real reductions is in establishing a proper emissions or trip baseline level. If, for example, facility XYZ has reduced emissions in excess of those required by the ERT, no "real" reductions will result from the establishment of ERT as a performance standard. Therefore, all quantification methodologies will be required to establish a standardized baseline condition, or use a default condition established by the Executive Officer, from which to calculate real emissions or trip reductions.

~~b)~~2. Surplus Reductions

"Surplus" reductions occur when an action is taken beyond existing ~~and planned~~ regional, state, and federal requirements. Obtaining surplus emission reductions means the benefit of a control strategy is not "double counted." In many cases, the proposed strategy requirements overlap completely with another rule, regulation, statute, or legislation. However, by revising the strategy to become more stringent, the action would become partially creditable, or surplus. To meet this surplus criterion, all quantification methodologies will be required to include a mechanism for subtracting any regulatory overlaps with the standardized baselines established to meet the "real" criterion described earlier.

~~c)~~3. Quantifiable Reductions

Although transportation control measure (TCM) strategies involve some degree of variance and uncertainty, creditable actions can be quantified through use of assumptions that are based either on case studies or on transportation supply and demand theories. Each assumption that is used to assign effectiveness or efficiency should be matched with either a case study, or on some measurable parameter. Basic "intuition," especially for indirect actions such as general education, "goodwill," or other "good faith

efforts," is not sufficient. Quantifiability is the main criterion used to determine the extent of any credit discounting. Those actions which are more easily quantified, with strong assumptions, would have limited discounting applied, while the more "intuitive" actions would need to be discounted to a much greater extent.

~~d)~~4. Enforceable

In addition, each proposed program should include a recordkeeping mechanism for compliance verification, as outlined in Chapter 4. The enforceability component requires that all records, sufficient to demonstrate compliance, be maintained by participating companies and be made available to the SCAQMD upon request.

III. TRIP REDUCTION STRATEGIES

Rule 2202 offers employers the opportunity to obtain VTECs from the implementation of the following optional trip reduction strategies. These VTECs, obtained through peak-commute trip reductions, other work-related trip reduction, VMT offsets or ~~employee~~ off-peak commute trip reductions~~ programs~~, can be applied towards meeting an employer's ERT.

A. Peak Commute Trip Reductions

Rule 2202 provides the option to obtain credit for reducing employee commute trips. Specifically, employers can reduce trips to work that occur during the morning peak congestion period (or "Peak Window") by creating incentives for ridesharing and other alternative transportation modes. VTECs shall be calculated using the formula in Figure III-1.

$$\text{VTEC} = \left[\begin{array}{c}\text{Creditable Commute Vehicle} \\ \text{Reductions (CCVR)}\end{array}\right] \times \left[\begin{array}{c}\text{Emission Factor (EF)} \\ \text{lbs/year}\end{array}\right]$$

where

CCVR = The daily average of total commute vehicle reductions that are real, enforceable, surplus, and quantifiable.

EF = Emission Factor (Table V-4)

Figure III-1. Vehicle Trip Emission Credit Generation for Work-Related Trip Reduction Programs.

B. Other Work-Related Trip Reductions

Employers may receive additional VTECs from employee commute reductions that occur outside of the peak window or from non-commute vehicle usage. VTECs from Other Work-Related Trip Reductions can be calculated using the formula in Figure III-2. The conversion factor is used to convert vehicle trip reductions to commute vehicles reductions and accounts for the return trip home, and includes an additional adjustment to account for other vehicle usage reduction during and outside the peak window. ~~Appendix A~~ Chapter V contains a complete discussion on the generation of VTECs.

$$VTEC = \left[\frac{\text{Creditable Trip Reductions (CTR)}}{CF}\right] \times \left[\begin{array}{c}\text{Emission Factor (EF)}\\ \text{lbs/year}\end{array}\right]$$

where

CTR = The daily average of total one-way trip reductions that are real, enforceable, surplus, and quantifiable. A round trip is considered to be two one-way trips.

CF = 2.0 for A.M. Peak Window
2.3 for Other Trips

EF = Emission Factor (Table V-4)

Figure III-2. Vehicle Trip Emissions Credit Generation for Peak-Commute and Other Work Related Trip Reduction Programs.

C. Vehicle Miles Traveled (VMT) Programs

Employers may elect to implement VMT reduction programs and receive VTECs toward their ERT. Reduction of annual employee commute VMT that may result from employment center relocation, video-conference centers, telecommuting centers or other alternative programs approved by the Executive Officer or designee. The Executive Officer shall not approve any VTEC program for VMT reduction unless it includes baseline VMT estimates and demonstrates that VMT reductions result in real, enforceable, quantifiable, and surplus emission reductions. See ~~Appendix B~~ Chapter VI formulas required for these calculations.

D. Parking Cash-Out Program

Employers may elect to implement a Parking Cash-Out Program to reduce employee commutes and receive VTEC toward meeting their ERT. Parking Cash-Out is a program where an employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space. VTEC calculation formula for this program is same as the one used for Other Work-Related Trip Reductions.

E. Employee Commute Reduction Programs

Details of this exemption are provided elsewhere in a companion guidance document titled "Employee Commute Reduction Program Guidelines."

IV. PROGRAM ADMINISTRATION

A. Registration

~~Companies~~ Employers participating in the Rule 2202 On-Road Motor Vehicle Mitigation Options emissions reduction program are required to notify the SCAQMD which option or options are selected through registration. ~~Company~~ Employer registration serves the purpose of both notifying the SCAQMD of the intent to implement options provided in the program, and also serves to identify the goals of the chosen options, including any demonstrations required. Registration shall be renewed annually.

B. Registration Form

~~Companies~~ Employers must identify which options will be used to attain their ERT. The ~~notification~~ registration form must include information which identifies the company and the worksites affected by the emissions reduction program, including the number of employees reporting to the worksite during the morning peak congestion period and the total employee count at the worksite.

C. VTEC Calculations

Employers claiming VTECs from the implementation of the optional Vehicle Trip Reduction strategy shall include as a part of their registration all VTEC calculations. All supporting documents shall be maintained on site for three years. Emission factors (i.e., pounds of pollutant per vehicle-year) to be used in the calculations are provided in this document.

D. Air Quality Investment Program

SCAQMD's Executive Officer will determine the amount of ~~mobile source~~ emission~~s~~ reductions for air quality investment programs when proposals are submitted for approval. Individual ~~companies~~ employers seeking this safe harbor alternative are not responsible for demonstrating emissions reduction equivalency; they are only responsible for keeping records of employment, and of "in-lieu fee" submittal.

E. Short Term Emission Reduction Credits (STERC) and Area Source Credits (ASC)

Employers may elect to use STERCs and ASCs generated in accordance with Regulations XIII and XXV, respectively. In order for STERCs and ASCs to be used to meet employers emission reductions target or as part of an air quality investment program the following apply for purposes of use in Rule 2202:

1. Only VOC and NOx Short Term ERCs (STERCs) issued in accordance with Rule 1309 - Emission Reduction Credits shall be allowed for use in Rule 2202.
2. STERCs are subject to the application, eligibility, registration, use, and transfer requirements in Rule 1309.
3. STERCs may be transferred in or out of Rule 2202 upon written request. STERCs transferred in to Rule 2202 shall be removed from the Regulation XIII Register of Titles before the STERC may be used in Rule 2202. Only the unused portion of the STERCs shall be transferred out of Rule 2202 and re-entered into the Regulation XIII Register of Titles.
4. STERCs issued pursuant to Rule 1309 may be used only if the original ERC was generated on or after January 1, 1996. The credit generation date is defined as the original date the SCAQMD issued the official Certificate of Title, not the date when the emission reductions occurred or when the ERC or Certificate was split or transferred.
5. A transaction/registration application and filing fee per transaction shall be required to process the STERC/ASC transaction.
6. STERCs will be converted into annual emissions (lbs/year). The average number of operating days used in the original ERC evaluations shall be the basis for converting the STERC to annual emissions.
7. STERCs and ASCs may be divided among several worksites.
8. ERCs that were transferred prior to approval of this guideline will be allowed continued use under the conditions which they were originally accepted.

F. Inter-Pollutant Crediting

Employers subject to Rule 2202 are required to implement an emission reduction program and meet an annual ERT for VOC, NOx, and CO. Any person may apply VOC or NOx emission credits to offset a worksite's CO emission reduction target. The inter-pollutant crediting ratio is based on the total annual average on-road motor vehicle emissions inventory and the relative emission amounts reported. The ratios are calculated by dividing the total CO emission inventory amount by the total VOC or NOx.

Using the inter-pollutant crediting any person may use VOC and/or NOx emission credits in lieu of all or part of the worksite's required CO emission reduction target. Inter-pollutant crediting is to be applied solely toward a worksite's CO emission reduction target and is subject to the approval of the Executive Officer. Inter-pollutant crediting shall not be used to increase or build a CO emission bank and is for compliance with an approved ERS submittal. The inter-pollutant crediting ratios are:

1 pound VOC = 10 pounds CO
1 pound NOx = 6 pounds CO

For example, any person may apply one pound of VOC to be equivalent to ten pounds of CO in lieu of the worksite's required CO emission reduction target.

~~E.~~G. Recordkeeping

The enforceability component of the On-Road Motor Vehicle Mitigation Options program requires that all records, sufficient to demonstrate compliance, be maintained by participating companies for a period of no less than three years and made available to the SCAQMD upon request in order to determine compliance. Specifically, participating companies should maintain a copy of the following records at all worksites:

- Registration form
- VTEC data and calculations
- List of program strategies or elements used for implementation

~~F.~~H. Compliance

Compliance with an alternative emission reduction program will be determined through an employer review process conducted by the SCAQMD. Compliance requirements for the "Employee Commute Reduction Program" exemption are included in the ECRP Guidelines.

Examples of violations of Rule 2202 would include: failure to maintain records; fabrication of records; or failure to obtain the amount of VTECs or emissions reductions identified as part of the company's registration submittal. In addition, failure to submit air quality investment "in-lieu" fees would be constituted as a violation of Rule 2202 for employers selecting this option.

~~G.~~I. Special Procedures

1. Extensions

Any employer may request an extension to the registration due date under the following circumstances:

- If an employer needs more time to submit a registration to meet the requirements of Rule 2202, additional time may be requested from the SCAQMD. The request must be in writing, state the reason for the extension request, the length of time needed, and include the appropriate filing fee.
- All extension requests and fees must be received by the SCAQMD, no later than 15 calendar days prior to the program due date;
- Requests are considered on a case-by-case basis and are granted for reasons that are beyond the control of the employer;
- An employer may request an extension to the registration due date after the registration has been disapproved for the first time. The request must be received within 15 days of the receipt of the registration disapproval. The SCAQMD will inform the employer in writing within 15 calendar days of receipt of request, whether the extension has been granted;
- An employer may, upon receipt of a written objection to the terms of the proposed registration by an employee, employee representative or employee organization, request a single extension of 30 days. A copy of the written objection should be attached to the request. One such request shall be granted by the SCAQMD; no subsequent extension may be granted for this purpose; and
- Any change in the permanent due date that results in additional time to submit a registration will be considered an extension of time and shall be subject to an extension filing fee.

2. Change of Ownership

In the case of ownership mergers, or change of ownership, the new owner must notify SCAQMD of this change within 30 days of the new ownership. The ~~District will then send a notification letter to the new employer, and 90 days from receipt of the letter, the employer must submit a registration or Employee Commute Reduction Program to the AQMD which adheres to~~ new owner must comply with all provisions of Rule 2202 and Guidelines ~~for the option~~ within 90 days of the change of ownership. The new owner(s) may choose to submit a ~~new management commitment~~ letter, instead of a new registration ~~or program~~, which states they will continue to implement the registration or program last approved by the SCAQMD.

3. Relocation

Any employer relocating to a new worksite must notify the SCAQMD within 30 days of the relocation. Relocations fall into two categories and are explained below:

- Employers relocating within two miles of the previous worksite address may elect to continue to implement the most recently approved registration ~~or program~~. Or, the company may elect to submit a new registration or program. The employer must inform SCAQMD of the preference in the notification of relocation letter. ~~If no preference is made in the letter, the company will automatically be sent an official notification package and will be required to submit a new registration or program within 90 days of receipt of the notification package~~.
- Employers relocating more than two miles from the previous worksite are required to submit a new registration ~~or program~~. The employer must submit the new registration or program within 90 days of the relocation ~~from receipt of the notification package from AQMD~~.

4. Registration Disapproval Appeals

The SCAQMD has 90 days to review the resubmitted registration. If the employer believes that the program meets the requirements of Rule 2202 and the Guidelines, and that the registration was improperly disapproved, the employer may appeal the disapproval to the SCAQMD Hearing Board. A petition for appeal of disapproval must be made within ~~10~~ 30 calendar days after the employer receives the notice of disapproval.

5. Delay Registration Review Requests

If an employer, employee, employee representative or employee organization requests a delay in action of registration review, the request must be in writing to the SCAQMD within 10 days of registration submittal and cannot delay the period of time to exceed the 90th day after submittal.

J. Guideline Updates

On a periodic basis, the Executive Officer shall review and amend these guidelines to ensure accuracy and to be consistent with SCAQMD and California Air Resources Board (CARB) policies and procedures for mobile source emission reductions. The guideline updates will be done in consultation with the regulated community and the SCAQMD Mobile Source Committee.

The emission factors found in Tables V-1, V-2, V-3, and V-4 will be updated when CARB releases the latest on-road motor vehicle emission model or EMFAC emission model.

-- NOTE --

The Appendices to the guidelines contain the full technical derivations for the formulas and methodologies used and defined by Rule 2202. Most employers will not need to refer to the Appendices. However, the Appendices can provide a better understanding of the basis for Emission Reduction determinations, and also would be used by companies and consultants who may wish to seek funding under the Air Quality Investment option.

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V. APPENDIX A

A. Emission Reduction Target (ERT)

Emission Reduction Target (ERT) is the annual VOC, NOx, and CO emissions required to be reduced by each worksite based on the number of employees reporting to work during the peak window and the appropriate Performance Target Zone in accordance with Rule 2202. The ERT for each pollutant, for each worksite may be calculated by using the following equation and appropriate commute emission factors from Tables V-1, 2, or 3.

$$ERT_{(e)} = \left[[Employees] \times [EERF]_{(e)} \right] - [VTEC]$$

where

$ERT_{(e)}$ = Emission Reduction Target for Emittent (e)

(e) = Emittent (NOx, VOC, CO~~, etc.~~)

Employees = Average daily number of employees reporting to work in the Peak Window[1] of Monday through Friday between the hours of 6:00 a.m. and 10 a.m.

$EERF_{(e)}$ = Employee Emission Reduction Factor for Emittent (e) determined by year of registration submittal and the worksite Performance Target Zone per Tables V-1, 2, or 3.

Emission Year	VOC	NOx	CO
~~**2000**~~	~~5.73~~	~~4.83~~	~~45.35~~
~~**2001**~~	~~5.22~~	~~4.42~~	~~42.27~~
~~**2002**~~	~~4.81~~	~~4.01~~	~~39.19~~
2003	~~4.40~~ 5.04	~~4.01~~ 5.69	~~36.12~~ 53.80
2004	~~3.99~~ 4.54	~~3.50~~ 5.04	~~33.04~~ 48.77
2005	~~3.48~~ 4.11	~~3.50~~ 4.54	~~29.96~~ 44.35
2006	~~3.48~~ 3.73	~~3.08~~ 4.09	~~28.22~~ 40.41
2007	~~3.07~~ 3.39	~~3.08~~ 3.71	~~26.88~~ 36.91
2008	~~2.66~~ 3.09	~~3.08~~ 3.36	~~25.55~~ 33.76
2009	~~2.66~~ 2.81	~~2.67~~ 3.05	~~23.80~~ 30.87
2010	~~2.15~~ 2.55	~~2.67~~ 2.76	~~22.47~~ 28.15

Table V-1: Employee Emission Reduction Factor: Performance Target Zone-1.

[1] ~~Monday through Friday between the hours of 6:00 a.m. and 10 a.m.~~

~~2000~~	~~4.40~~	~~3.80~~	~~35.19~~
~~2001~~	~~4.10~~	~~3.39~~	~~32.83~~
~~2002~~	~~3.79~~	~~3.08~~	~~30.37~~
2003	~~3.38~~ 3.91	~~3.08~~ 4.42	~~28.01~~ 41.76
2004	~~3.07~~ 3.52	~~2.78~~ 3.92	~~25.65~~ 37.85
2005	~~2.76~~ 3.19	~~2.78~~ 3.52	~~23.19~~ 34.42
2006	~~2.76~~ 2.89	~~2.36~~ 3.18	~~21.85~~ 31.37
2007	~~2.36~~ 2.63	~~2.36~~ 2.88	~~20.83~~ 28.65
2008	~~2.05~~ 2.39	~~2.36~~ 2.61	~~19.80~~ 26.21
2009	~~2.05~~ 2.18	~~2.06~~ 2.37	~~18.47~~ 23.96
2010	~~1.74~~ 1.98	~~2.06~~ 2.14	~~17.44~~ 21.85

Table V-2: Employee Emission Reduction Factor: Performance Target Zone-2.

Emission Year	VOC	NOx	CO
~~2000~~	~~3.07~~	~~2.57~~	~~24.42~~
~~2001~~	~~2.87~~	~~2.36~~	~~22.78~~
~~2002~~	~~2.56~~	~~2.16~~	~~21.03~~
2003	~~2.36~~ 2.71	~~2.16~~ 3.07	~~19.39~~ 28.97
2004	~~2.15~~ 2.45	~~1.85~~ 2.72	~~17.75~~ 26.26
2005	~~1.84~~ 2.21	~~1.85~~ 2.44	~~16.11~~ 23.88
2006	~~1.84~~ 2.01	~~1.64~~ 2.20	~~15.18~~ 21.76
2007	~~1.64~~ 1.83	~~1.64~~ 2.00	~~14.47~~ 19.87
2008	~~1.43~~ 1.66	~~1.64~~ 1.81	~~13.75~~ 18.18
2009	~~1.43~~ 1.51	~~1.44~~ 1.64	~~12.83~~ 16.62
2010	~~1.23~~ 1.37	~~1.44~~ 1.49	~~12.11~~ 15.16

Table V-3: Employee Emission Reduction Factor: Performance Target Zone-3.

B. Vehicle Trip Emission Credit (VTEC)

Vehicle Trip Emission Credits (VTEC) for various options are listed below:

For Peak Commute Trip Reductions

$$VTEC = \begin{bmatrix} \text{Creditable Commute} \\ \text{Vehicle Reductions (CCVR} \end{bmatrix} \mathbf{x} \begin{bmatrix} \text{Emission Factor (EF)} \\ \text{lbs/year} \end{bmatrix}$$

where
CCVR = The daily average of total commute vehicle reductions that are real, surplus, and quantifiable.
EF = Emission Factor

Other Work- Related Trip Reductions

$$VTEC = \begin{bmatrix} \dfrac{\text{Creditable Trip Reductions (CTR)}}{\text{CF}} \end{bmatrix} \mathbf{x} \begin{bmatrix} \text{Emission Factor (EF)} \\ \text{lbs/year} \end{bmatrix}$$

where
CTR = The daily average of total one-way trip reductions that are real, surplus, enforceable, and quantifiable. A round trip is considered to be two one-way trips.
CF = 2.0 for A.M. Peak Window
2.3 for Other Trips
EF = Emission Factor of each Emittent (Table V-4)

C. Emissions Calculation Data

Emission Factor
Table V-4 shows the annual emissions factors for VOC, NOx, and CO (pounds/year per daily commute vehicle).

In calculating VTECs for Commute Trip Reductions, employers may utilize data obtained by one of the following methods:

(a) Default data based on the weighted average of the average vehicle ridership survey data of the previous three years; or
(b) Data obtained by conducting an average vehicle ridership survey in accordance with Rule 2202 - Commute Reduction Program Guidelines; or
(c) Data obtained by an equivalent methodology approved by the Executive Officer.

Emission Year	VOC	NOx	CO
~~2000~~	~~13~~	~~11~~	~~103~~
~~2001~~	~~12~~	~~10~~	~~96~~
~~2002~~	~~11~~	~~9~~	~~89~~
2003	~~10~~ 11	~~9~~ 13	~~82~~ 122
2004	~~9~~ 10	~~8~~ 11	~~75~~ 110
2005	~~8~~ 9	~~8~~ 10	~~68~~ 101
2006	~~8~~ 8	~~7~~ 9	~~64~~ 92
2007	~~7~~ 8	~~7~~ 8	~~61~~ 84
2008	~~6~~ 7	~~7~~ 8	~~58~~ 77
2009	~~6~~ 6	~~6~~ 7	~~54~~ 70
2010	~~5~~ 6	~~6~~ 6	~~51~~ 64

Table V-4: Emission Factors (lbs per year per daily commute vehicle).

Trips per Vehicle Adjustment Factor

The trip per vehicle adjustment factor, for the purposes of Rule 2202 is equal to 2.0 trips per daily commute vehicle. This factor accounts for the trip to work and the return trip home.

Adjustment Factor

Due to the differences in emission rates due to travel demand and vehicle speeds, trip reductions are subject to a trip adjustment factor of 1.15 for trips reduced outside of the a.m. peak period.

Conversion Factor

Rule 2202 combines the trips per vehicle adjustment factor (TPV) with the adjustment factor to meet a standardized trip (ADJ(CTR)) and presents the product of the two variables as an overall conversion factor (CF), as follows:

CF = TPV x ADJ (CTR)

Therefore, with a TPV equal to 2.0 and an ADJ of 1.0 for a.m. peak period trips and 1.15 for other trips, the conversion factor is equal to:

CF = 2.0 x 1.0
2.0 (for a.m. peak window trips)
CF = 2.0 x 1.15
= 2.30 (trips outside the a.m. peak window)

D. Emission Reduction Credits From ~~Old-Vehicle Scrapping~~ Other Credit Programs

~~An old-vehicle scrapping program implemented in accordance with Rule 1610 - Old-Vehicle Scrapping will result in the generation of MSERCs.~~ Employers can apply~~/~~ or use ~~MSERCs~~ emission reductions obtained from ~~an old-vehicle scrapping program~~ other emission credit programs towards demonstrating compliance with their ERTs. ~~The old-vehicle scrapping~~ This may result in different relative emission reductions of VOC, NOx and CO compared to work related employee commute trips. Employers that implement ~~old-vehicle scrapping~~ an emission reduction program and end up with surplus emission reductions with respect to some of the pollutants can bank these credits and use them towards their future ERT, or trade them to other employers. Alternatively, employers that have a shortfall in meeting their ERTs can purchase surplus ~~MSERCs~~ emission reduction credits from other employers. ~~MSERCs~~ Emission reduction credits shall be valid in accordance with the limitations as set forth in ~~Rule 1610~~ SCAQMD regulations, policies or guidelines under which the credit was generated.

Emission credits may be obtained from Regulation XVI - Mobile Source Offset Programs, Regulation XIII - New Source Review, or Regulation XXV - Intercredit Trading.

~~Emission credits may also be obtained from MSERCs generated under Rule 1612 (Clean On-Road Vehicles), Rule 1620 (Clean Off-Road Mobile Equipment) and other mobile source offset programs specified in Regulation XVI. Other sources of emission credits include Regulation XIII and Regulation XXV.~~

VI. APPENDIX B

A. Emission Generation

Motor vehicles are responsible for the generation of VOC, NOx, and CO emissions. These pollutants are linked to either the combustion process of the engine or to the evaporation of the motor fuel from the storage and delivery system. These processes can be further categorized into different operating modes of the vehicle. Combustion emissions are usually higher during start-up, and are even higher during "cold" starts, since the vehicle's emission control device operates more efficiently at elevated temperatures. In addition, since the rate of evaporation increases at higher temperatures, more emissions result during the "hot soak" period following a trip. Table VI-1 below lists the vehicle trip generated emission sources.

VOC	NOx	CO
~~Cold/Hot~~ Start Ignition	~~Cold/Hot~~ Start Ignition	~~Cold/Hot~~ Start Ignition
Running Exhaust	Running Exhaust	Running Exhaust
Hot Soak Evaporation		
Running Losses		
Resting Losses		
Diurnal Evaporation		

Table VI-1: Vehicle Trip Generated Emission Sources.

B. EMFAC and BURDEN Models

SCAQMD relies on the California Air Resources Board (CARB) EMFAC computer model to produce emission factors which are then used as input into CARB's BURDEN computer program to generate regional emissions inventories. The emissions inventories can then be categorized, for reduction quantification purposes, into a trip component, and a vehicle miles traveled (VMT) component.

Trip Component

The emission sources categorized as a trip component include the start ignition emissions, and the hot soak evaporation emissions. Emissions from these sources are therefore represented as pounds (grams) per trip.

VMT Component

The emission sources categorized as VMT components include the running exhaust, and running loss emissions. Emissions from these sources are represented as pounds (grams) per VMT.

Resting and Diurnal Evaporation

The remaining emissions are not attributed to trip reduction programs; resting and diurnal evaporation occurs at a rate independent from the vehicle's trip VMT rate.

C. Daily Commute Vehicle Emission Factor

Assumptions

The calculation of daily commute vehicle emission factors rely on the following assumptions:

1. CARB's EMFAC 2002 emission inventory model, version 2.2, dated September 23, 2002 was used to determine the daily commute vehicle emission factors.

~~1.~~2. The trip generation rate assigned to daily commute vehicles, for the purposes of Rule 2202, is 2.0 trips per daily commute vehicle.

~~2.~~3. The regional emission generation rates, daily trip, daily VMT, and other parameters, as determined by the CARB BURDEN and EMFAC computer models, are accurate and representative for the years~~, 1995, 2000, and 2010~~ 2003 through 2010.

~~3. The parameters generated by BURDEN are accurately represented by linear interpolation for the intermediate years between 1995 and 2010.~~

4. The average work-trip length, according to the~~ Commuter Transportation Services~~ Southern California Association of Governments (SCAG) 199~~3~~9 State of the Commute, is accurate and representative, and equal to ~~15~~ 16 miles.

5. Reactive organic gas emissions from diurnal and resting loss evaporation are constant and independent from the vehicle trip VMT rate.

6. Commuting vehicles operate primarily in cold start mode and is measured as start ignition.

7. The number of annual operating days for commute vehicles equal to 260 days per year~~, as presented in the ARB draft document, An Emissions Formula for Employer-Based Trip Reductions (January 1995), is accurate and representative~~.

~~8.The ARB BURDEN model produces emissions inventories corresponding to six time periods. Two of these correspond to the morning and afternoon peak commute periods (i.e., 6 a.m. - 9 a.m. and 3 p.m. - 6 p.m.). These two period-specific emission inventories, with corresponding VMT, were used to develop grams per miles emission rates.~~

~~9.~~8. Trip end emissions are based on overall South Coast Air Basin Inventories.

~~10.~~9. Annual average BURDEN inventory output was used to develop the rule emission factors~~ were determined based on ARB BURDEN ozone planning and CO planning inventories, based on the following weighted average: (7/12 x ozone planning inventory) + (5/12 x CO planning inventory)~~.

Methodology

Annual emissions per daily commute vehicle are therefore, for each pollutant and year:

$$\text{Emission Factor} = 2.0\ \text{TPV} \times \left[\left[\begin{array}{c}\text{Emissions per}\\ \text{Vehicle Trip}\end{array}\right] + \left[\begin{array}{c}\text{Emissions}\\ \text{per VMT}\end{array}\right] \times 16\ \text{miles/trip}\right] \times 260\ \text{dpy}$$

Where TPV = Trips per Daily Vehicle
dpy = Days per Year

D. Emission Factor Data

Tables V-1, 2, 3 and 4 were developed based on the CARB BURDEN model output. These values were used to derive the daily commute vehicle emission factor. The calculated emission factor represents emissions from light-duty vehicles (LDV), which are considered to be passenger cars and light duty trucks, since both are used for work commute purposes.

~~YEAR~~	~~TYPE~~	~~RUNNING EXHAUST (grams/mi)~~	~~COLD START EXHAUST (grams/trip)~~	~~RUNNING LOSS (grams/mi)~~	~~HOT SOAK (grams/trip)~~
~~1995~~	~~LDV~~	~~0.535~~	~~5.179~~	~~0.338~~	~~0.955~~
~~2000~~	~~LDV~~	~~0.258~~	~~3.46~~	~~0.256~~	~~0.53~~
~~2005~~	~~LDV~~	~~0.142~~	~~1.975~~	~~0.186~~	~~0.349~~
~~2010~~	~~LDV~~	~~0.103~~	~~0.600~~	~~0.117~~	~~0.234~~

Year	Start Exhaust grams/trip	Hot Soak grams/trip	Running Exhaust grams/mile	Running Loss grams/mile
2003	1.146	0.239	0.274	0.265
2004	1.051	0.221	0.233	0.251
2005	0.962	0.205	0.212	0.226
2006	0.880	0.191	0.187	0.209
2007	0.804	0.179	0.165	0.194
2008	0.733	0.169	0.146	0.181
2009	0.666	0.160	0.128	0.169
2010	0.603	0.151	0.112	0.157

Table VI-2: VOC Mobile Source Emission Factors (LDV).

~~START YEAR~~	~~TYPE~~	~~RUNNING EXHAUST (grams/mi)~~	~~COLD START EXHAUST (grams/trip)~~
~~1995~~	~~LDV~~	~~0.712~~	~~2.762~~
~~2000~~	~~LDV~~	~~.485~~	~~1.973~~
~~2005~~	~~LDV~~	~~.353~~	~~1.514~~
~~2010~~	~~LDV~~	~~.268~~	~~1.225~~

Year	Start Exhaust grams/trip	Running Exhaust grams/mile
2003	0.717	0.756
2004	0.627	0.585
2005	0.593	0.524
2006	0.559	0.472
2007	0.527	0.426
2008	0.495	0.385
2009	0.462	0.348
2010	0.430	0.315

Table VI-3: NOx Mobile Source Emission Factors (LDV).

~~YEAR~~	~~TYPE~~	~~RUNNING EXHAUST~~	~~COLD START EXHAUST~~
		~~(grams/mi)~~	~~(grams/trip)~~
~~1995~~	~~LDV~~	~~6.566~~	~~54.484~~
~~2000~~	~~LDV~~	~~3.214~~	~~41.484~~
~~2005~~	~~LDV~~	~~2.326~~	~~24.081~~
~~2010~~	~~LDV~~	~~1.921~~	~~15.781~~

Year	Start Exhaust grams/trip	Running Exhaust grams/mile
2003	10.892	5.977
2004	10.031	5.407
2005	9.255	4.909
2006	8.553	4.466
2007	7.918	4.072
2008	7.336	3.719
2009	6.786	3.395
2010	6.261	3.092

Table VI-4: CO Mobile Source Emission Factors (LDV).

VOC Emission Factor for Calendar Year ~~1995~~2003:

Trip End Component:

= (~~Cold~~ Start Exhaust Emissions) + (Hot Soak Emissions)

= ~~5.179~~ 1.146 grams/trip + ~~0.995~~ 0.239 grams/trip = ~~6.174~~ 1.385 grams/trip

VMT Component:

= [(Running Exhaust) + (Running Loss)] x trip length

= (~~0.535~~ 0.274 grams/mile + ~~0.338~~ 0.265 grams/mile) x ~~15~~ 16 miles

= ~~13.100~~ 8.624 grams/trip

VOC Emission Factor:

= 2.0 trips per vehicle/day x (Trip End Component + VMT Component) x 260 days per year / 454 grams per lb

= 2.0 trips per vehicle/day x (~~6.174 + 13.100~~ 1.387 + 8.624 grams/trip) x 260 days/year / 454 grams per lb

= ~~22~~ 11 lb/year per daily commute vehicle

Table V-4 lists the remaining daily commute vehicle emission factors.

The emission factors shown in Tables V-1, V-2, and V-3 may be modified to site specific emission factors reflecting vehicle age and trip length characteristics of the employee vehicle fleet.

The daily commute vehicle emission factors are developed from

VII. GLOSSARY

1. ANNUAL REGISTRATION means an annual form submitted by an employer to the SCAQMD per paragraph (i)(1) of the Rule.

2. AREA SOURCE CREDITS (ASCs) AREA SOURCE CREDITS (ASCs) are emission reduction credits, issued pursuant to Regulation XXV - Intercredit Trading.

~~2.~~3. AVR DATA COLLECTION METHOD is a method for gathering employee commute mode data needed to calculate an employer's average vehicle ridership.

~~3.~~4. COMPRESSED WORK WEEK (CWW) applies to employees who as an alternative to completing basic work requirement in five eight-hour workdays in one week, or 10 eight-hour workdays in two weeks, are scheduled in a manner which reduces vehicle trips to the worksite. The recognized compressed work week schedules for this Rule are 36 hours in three days (3/36), 40 hours in four days (4/40), or 80 hours in nine days (9/80).

~~4.~~5. DISABLED EMPLOYEE means an individual with a physical impairment which prevents the employee from traveling to the worksite by means other than a single-occupant vehicle.

6. EMISSION REDUCTION CREDITS (ERCs) are emission reduction credits, issued pursuant to Regulation XIII - New Source Review.

~~5.~~7. EMPLOYEE COMMUTE REDUCTION PROGRAM means a triennial program or annual analysis under the Employee Commute Reduction Program option, submitted to the SCAQMD, in accordance with the companion guidelines.

~~6.~~8. EMPLOYEE is any person employed by a person(s), firm, business, educational institution, non-profit agency, or corporation, government or other entity. The term excludes seasonal employees; temporary employees; volunteers; field personnel; field construction workers; and independent contractors.

~~7.~~9. FIELD CONSTRUCTION WORKER means an employee who reports directly to work at a construction site.

~~8.~~10. FIELD PERSONNEL means employees who spend 20% or less of their work time, per week, at the worksite and who do not report to the worksite during the peak period for pick-up and dispatch of an employer-provided vehicle.

~~9.~~11. HOLIDAYS are those days designated as National and State Holidays that shall not be included in the survey period.

~~10.~~12. INDEPENDENT CONTRACTOR means an individual who enters into a direct written contract or agreement with an employer to perform certain services and is not on the employer's payroll.

13. INTER-POLLUTANT CREDITING means the use of emission reduction credits of one type of pollutant that may be used in lieu of another type of pollutant.

~~11.~~14. LOW-INCOME EMPLOYEE means an individual whose salary is equal to, or less than, the current individual income level set in the California Code of Regulations, Title 25, Section 6932, as lower income for the county in which the employer is based. Higher income employees may be considered to be "low-income" if the employees demonstrate that the program strategy would create a substantial economic burden.

~~12.~~15. PART-TIME EMPLOYEE means any employee who reports to a worksite on a part-time basis fewer than 32 hours per week, but more than four hours per week. These employees shall be included in the employee count for purposes of Rule applicability; and for emission reduction calculations of the employer provided the employees report to the worksite during the Peak Commute Window.

~~13.~~16. PEAK COMMUTE WINDOW is the period of time, Monday through Friday between the hours of 6:00 a.m. and 10:00 a.m.

~~14.~~17. PERFORMANCE TARGET ZONE for each worksite is determined by its geographic location within the geographic boundaries as described in Attachment I of Rule 2202.

~~15.~~18. POLICE/SHERIFF/FEDERAL FIELD AGENTS means any employee who is certified as a law enforcement officer and is employed by any federal state, county or city entity. Such employees are only federal field agents, police officers and sheriffs who perform field enforcement and/or any investigative functions. This would not include employees in non-field or non-investigative functions. These employees shall be included in the employee count for Rule applicability but are not required to be included in the number of employees in the peak window and may therefore, be exempted from the average vehicle ridership (AVR) survey. Those worksites electing to exclude such employees from the AVR survey and calculation must provide the basic ridesharing support strategies including but not limited to ridematching and transit information for all employees as well as preferential parking and guaranteed return trips for said employees who are ridesharing.

~~16.~~19. SEASONAL EMPLOYEE means a person who is employed for less than a continuous 90-day period or an agricultural employee who is employed for up to a continuous 16-week period.

20. SHORT TERM EMISSION REDUCTION CREDITS (STERCs) are emission reduction credits, issued pursuant to Regulation XIII - New Source Review.

~~17.~~21. STUDENT WORKERS are students who are enrolled and gainfully employed (on the payroll) by an educational institution. Student workers who work more than four hours per week are counted for Rule applicability and if they report to work during the 6:00 a.m. - 10:00 a.m. window are counted for emission reduction calculations.

~~18.~~22. TELECOMMUTING means working at home, off-site, or at a telecommuting center, for a full workday that eliminates the trip to work or reduces travel distance by more than 50%.

~~19.~~23. TEMPORARY EMPLOYEE means any person employed by an employment service or agency that reports to a worksite other than the employment agency's worksite, under a contractual arrangement with a temporary employer. Temporary employees are only counted as employees of the temporary agency for purposes of Rule applicability.

~~20.~~24. TRANSPORTATION MANAGEMENT ASSOCIATION OR TRANSPORTATION MANAGEMENT ORGANIZATION (TMA/TMO) means a private/non-profit association that has a financial dues structure joined together in a legal agreement for the purpose of achieving mobility and air quality goals and objectives within a designated area.

25. VOLUNTEER means any person who reports to a worksite and is not on the payroll of that employer.

~~21.~~26. WORKSITE EMPLOYEE THRESHOLD means 250 employees employed at a single worksite for the prior consecutive six-month period calculated as a monthly average and 33 or more employees scheduled to report to work during the Peak Commute Window any one day during the prior consecutive 90 days.

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